

Catalog of Solar Flare Events with X-ray Classes M1 - X>17.5 XXIV Cycle of Solar Activity (I.2009 – I2.2019 ...)

by V.N. Ishkov, IZMIRAN, GC RAS ishkov@izmiran.ru

DATE: y m d - year, month and day of the flare event began.

TIME (UT): - the begin, peak and end time of the flare event. The begin time is defined as the first minute in a sequence of 4 minutes of a steep monotonic increase (0.1-0.8 nm = 1-12.5 keV) in X-ray flux, but if the Ha-flare begins more early, then 'to' is the start time of Ha-flare. In this case the optical importance is put by the first. The X-ray maximum is taken as the minute of the peak X-ray flux. The end time is the time when the flux level decays to a point halfway between the maximum flux and the pre-flare background level X-ray or the time of the Ha-flare, when the duration of Ha-flare more than the duration of X-ray burst.

CLASS,

IMPORTANCE: - X-ray class and optical importance of the flare event. The field 'opt' is blank for X-ray events with no optical correlation (no optical flare observed or no optical patrol at the time and for flares that occur in unassigned regions).
X-ray/opt The X-ray flare classification by peak flux range (0.1-0.8 nm = 1-12.5 keV) in mks system ($W \cdot m^{-2}$):
A - $<10^{-7}$; B - 10^{-7} - 10^{-6} ; C - 10^{-6} - $<10^{-5}$; M - $5 \cdot 10^{-5}$ - $<10^{-4}$; X - $>10^{-4}$.
Importance is the corrected area of the flare in heliospheric square degrees at maximum brightness, observed in the Ha line (656.3 nm):
S - Subflare (area <2.1 deg 2);
1 - Importance 1 (2.1 $<$ area <5.1 deg 2);
2 - Importance 2 (5.2 $<$ area <12.4 deg 2);
3 - Importance 3 (12.5 $<$ area <24.7 deg 2);
4 - Importance 4 (area >24.8 deg 2).
Brightness is the relative maximum brightness of flare in Ha: F - faint; N - normal; B - brilliant.

IF: $J \cdot m^{-2}$ - the integrated X-ray flux from the start, through a maximum, and up to 0.5 maximum, in joule multiplied by m (meter) in the minus of the second degree.

COORDINATES: - lt (heliographic latitude) - the distance in degrees from the solar equator.
lt, lg, L lg (central meridian) - the distance in degrees from a line extending from the north solar rotational pole to the south solar rotational pole through the center of the solar disk as viewed from Earth.
L - (Carrington longitude) - the heliographic longitude of solar feature in the coordinate system that rotates with the Sun.
The spherical, heliographic coordinates of the flare event are determined either from the flare image in the Ha line or from the X-ray burst image, or calculated from the position of the active region, both on the visible disk of the Sun and beyond the limb.

In the latter case, small letters are used.

According to:

<https://www.ngdc.noaa.gov/stp/space-weather/solar-data/solar-features/solar-flares/h-alpha/reports/soon/>,

<http://legacy-www.swpc.noaa.gov/weekly/index.html>) and

<https://www.ngdc.noaa.gov/stp/space-weather/solar-data/solar-features/solar-flares/x-rays/goes/>.

- AR - SWPC NOAA-assigned solar active region number. Clicking on the active link to the corresponding page of the website http://helio.mssl.ucl.ac.uk/helio-vo/solar_activity/arstats/arstats_page5.php?region=XXXXX.
- RADIO MHz: - Peak Radio Flux is the peak value above pre-burst background of associated radio bursts at
245 2695 frequencies of 245 and 2695 MHz in solar flux units (sfu), ($1 \text{ sfu} = 10^{-22} \cdot \text{W} \cdot \text{m}^{-2} \cdot \text{Hz}^{-1}$).
- RADIO SWEEP - the intensity is a relative scale from 1 (minor) to 3 (major) of any sweep radio event associated with the energetic event, as follows:
Type II: Slow drift burst.
Type IV: Broadband smooth continuum burst (<http://legacy-www.swpc.noaa.gov/weekly/index.html>).
- CME: - Coronal Mass Ejection:
to, v, da, pa to - onset time, earliest indication of liftoff;
v - median velocity (km/s);
da - angular width (degrees);
pa - position angle measured from solar north in degrees (counter-clockwise);
CME on LASCO CME - list: https://cdaw.gsfc.nasa.gov/CME_list/;
c - preliminary CME - list: <http://sidc.oma.be/cactus/catalog.php>;
g - no data, g(6/06-8/01) - there are no data from 06d06h to 08d01h.
- X-ray hard: - An: R - Space satellite RHESSI (The Reuven Ramaty High Energy Solar Spectroscopic Imager)
An, tm, Emax http://hesperia.gsfc.nasa.gov/hessidata/dbase/hessi_flare_list.txt;
n - number of hard X-ray bursts in the flare event - RHESSI analysis;
tm - time of maximum intensity of the hardest X-ray burst in this flare event;
Emax - maximal energetic band of the hardest X-ray in the flare event in keV.
g - no data, g(6/06-8/01) - there are no data from 06d06h to 08d01h.
- PROTONS: - D - day of Solar Proton Event flux maximum;
D, tmax, Ipr tmax - time of proton ($E > 10 \text{ MeV}$) maximum;
Ipr - proton flux for ($E > 10 \text{ MeV}$), given in particle flux units ($1 \text{ pfu} = 1 \text{ p}/(\text{cm}^2 \cdot \text{s} \cdot \text{sr})$).
We defines the start of a proton event to be the first of 3 consecutive data points with fluxes greater than or equal to 1 pfu.
- GLE - Ground Level Event.
- n - solar neutrons registration.
- Attendant phenomena - active dynamic phenomena, constituting the flare event:
WL - white light event;

2011

DATE		TIME		CLASS		COORDINATES		AR	RADIO MHZ		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant		
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to / v	/da / pa	An / tm / Emax,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu	km/s		keV		D tmax/Ipr					
2011	10	128	0044	0103	>0110	M1.3	.093	N16W90L343	11149				II/1	0126/0606/119/290		R2	/0056/025-050	28	1625/0003	DSF	
2011	10	209	0123	0131	>0135	M1.9/SF	.0063	N17W72L172	11153												
2011	10	213	1728	1738	1846	M6.6/1N	.040	S20E04L036	11158	9900	210	II/1	IV/2	1836/0373/276/089							
2011	10	214	1720	1726	1804	M2.2/1N	.009	N56W18L034	11158				II/2	1824/0326/360/315	R	/1728/006-012					
2011	10	215	0144	0156	>0206	X2.2	.160	S20W15L034	11158	45000	1300	II/2	IV/2	0224/0669/360/189	R	/0156/050-100	15	1115/0002	WL	DSF	
2011	10	216	0132	0139	>0146	M1.0	.0051	S20W24L034	11158					0236/0411/092/035	R	/0138/025-050					
2011	10	216	0735	0744	>0755	M1.1	.0086	N10E25L331	11161						R	/0748/012-025					
2011	10	216	1419	1425	1436	M1.6/1F	.0044	S20W32L034	11158	9900	330	II/3	IV/1	g(16/13-16/21)	R	/1425/025-050					
2011	10	218	0955	1011	>1015	M6.6	.0019	S20W53L034	11158	230				1212/0350/089/272?	R2	/1011/050-100					
2011	10	218	1023	1026	>1037	M1.0	.007	N10E02L334	11162												
2011	10	218	1259	1303	>1306	M1.4	.0033	S20W54L034	11158						R	/1303/025-050					
2011	10	218	1400	1408	>1415	M1.0	.005	N10W01L336	11162					1712/0259/099/310?	R	/1408/012-025					
2011	10	218	2056	2104	>2114	M1.3	.0095	N10W04L336	11162						R	/2103/006-012					
2011	10	224	0723	0735	>0742	M3.5	.020	N14E87L179	11163	800	180	II/2	IV/1	0748/1186/158/096	R	/0732/050-100					
2011	10	228	1238	1252	>1303	M1.1	.0091	N24E40L164	11164	100				1348/0341/030/079	R	/1250/025-050					
2011	10	307	0500	0513	0525	M1.2/1F	.0081	N24W48L164	11164						R	/0511/025-050					
2011	10	307	0749	0754	0803	M1.5/SF	.0037	S20W78L182	11165	110											
2011	10	307	0759	0807	0828	M1.4/1F	.010	N25W47L164	11164	100	100				R	/0820/006-012					
2011	10	307	0914	0920	0931	M1.8/SF	.0089	N23W50L164	11164		190				R	/0919/025-050					
2011	10	307	1345	1430	>1456	M1.9/SF	.062	N10E18L091	11166				II/2	IV/1	1448/0698/261/053	R3	/1409/012-025?				
2011	10	307	1943	2012	>2058	M3.7	.120	N22W67L164	11164	5400	23000	II/3		2000/2125/360/313	R2	/2005/100-300	08	0800/0050	n	DSF	
2011	10	307	2145	2150	>2155	M1.5	.0066	S17W82L182	11165						R2	/2149/025-050					
2011	10	308	0224	0229	0238	M1.3/1N	.0032	S18W79L182	11165						R	/0229/025-050					
2011	10	308	0337	0358	>0420	M1.5/1F	.028	S19E69L028	11171		130	II/2	IV/1	0412/0732/260/119	R	/0347/025-050					
2011	10	308	1035	1044	>1055	M5.3/1F	.034	S17W86L182	11165												
2011	10	308	1808	1828	>1841	M4.4	.057	S17W90L182	11165					1900/0283/043/249	R	/1821/050-100				DSF	
2011	10	308	1946	2016	>2119	M1.4	.067	S17W90L182	11165					2012/0702/099/225	R3	/2018/012-025					
2011	10	309	1035	1107	>1121	M1.7/SF	.026	N08W03L093	11166	480				1212/0315/013/235?	R2	/1051/025-050					
2011	10	309	1317	1402	>1413	M1.7/SF	.023	N09W06L1093	11166				IV/1	1612/0215/018/235?	R2	/1400/025-050					
2011	10	309	2313	2323	0016	X1.5/2B	.067	N08W09L093	11166						R2	/2322/050-100				DSF	
2011	10	310	2234	2241	>2249	M1.1/SF	.0058	N08W25L093	11166					0012/0143/014/091?	R	/2240/012-015					
2011	10	312	0433	0443	0454	M1.3/2N	.0079	N05W36L093	11166				II/1								
2011	10	314	1930	1952	2015	M4.2/1N	.010	N18W48L062	11169					2135/0146/044/279	R2	/1951/050-100					
2011	10	315	0018	0022	>0024	M1.0	.0018	N18W55L062	11169						R	/0022/050-100					
2011	10	323	0203	0217	>0224	M1.4	.009	S16E63L200	11176	970				0236/0772/051/131	R	/0204/006-012					
2011	10	324	1201	1207	1217	M1.0/1F	.0033	S16E43L200	11176	910				1248/0540/191/092?	R	/1212/012-025					
2011	10	325	2308	2322	>2330	M1.0/SF	.008	S12E23L200	11176	870	170	II/1	IV/1	0125/0339/012/004?	R	/2319/012-025					
2011	10	415	1702	1712	1844	M1.3/1F	.012	N14W19L338	11190		64			1936/0193/028/114	R2	/1722/012-025					
2011	10	422	0435	0457	0522	M1.8/SN	.029	S18E43L192	11195					0624/0248/060/305?	R	/0448/025-050					
2011	10	422	1547	1553	1641	M1.2/1N	.011	S18E35L192	11195					g	R	/1617/012-025					
2011	10	528	2109	2150	>2201	M1.1/SF	.023	S20E71L037	11226						R2	/2150/012-025					
2011	10	529	1008	1033	1133	M1.4/1F	.038	S22E65L037	11226	100		II/1		1036/0646/119/116?	R	/1031/012-025					
2011	10	607	0616	0641	0809	M2.5/2N	.044	S21W54L037	11226	6400	710	II/2	IV/2	0649/1255/360/250	R2	/0638/050-100	07	1820/0073	n		
2011	10	614	2136	2147	>2210	M1.3/SF	.018	N15E77L165	11236					2236/0313/028/135	R	/2146/050-100	17	~00/0008			
2011	10	727	1548	1607	1640	M1.1/1N	.013	N20E37L358	11260	140					R	/1605/012-025					
2011	10	730	0204	0209	>0212	M9.3/SF	.020	N14E35L358	11261	180	180				R	/0209/050-100					
2011	10	802	0519	0619	>0648	M1.4/1N	.039	N14W15L358	11261	620	220	II/2		0636/0712/268/285	R3	/0612/012-025	02	~11/0002			
2011	10	803	0308	0337	0405	M1.1/SF	.016	N17W24L358	11261						R2	/0335/025-050					
2011	10	803	0429	0432	0504	M1.7/1F	.003	N15E08L301	11263		130				R2	/0432/050-100					

D A T E		T I M E			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME	X-ray hard		PROTONS		Attendant
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to / v /da / pa	An / tm / Emax,	E>10MeV	GLE	n	phenomena
						X-ray/opt	J·m ⁻²				sfu	km/s			keV	D tmax/Ipr			
20111103	2328	2336	>2344	M2.1/1N	.014	N19E61L117	11339							0125/0756/360/084					
20111104	2031	2040	2058	M1.0/SF	.006	N18E46L117	11339							2324/0312/013/070	R	/2045/012-025			
20111105	0308	0335	>0358	M3.7/1F	.082	N20E46L117	11339							0612/0555/038/026?	R	/0324/025-050			
20111105	1025	1121	<1237	M1.1/SN	.017	N21E42L117	11339							1148/0167/018/143?	R	/1116/025-050			
20111105	2031	2038	2139	M1.8/1N	.016	N21E34L117	11339							2116/0372/017/255?	R2	/2041/012-025			
20111106	0046	0103	0155	M1.2/SF	.018	N21E35L117	11339							0125/0222/141/085	R3	/0137/012-025			
20111106	0614	0635	0653	M1.4/SN	.010	N21E31L117	11339							0812/0235/041/063	R	/0617/003-006			
20111109	1304	1335	>1412	M1.1/SF	.033	N24E35L065	11342	110				II/2		1336/0907/360/048	R2	/1401/012-025			DSF
20111115	0859	0912	0933	SF/M1.2	.010	N20W74L087	11348							0948/0510/084/331	R2	/0911/012-025			
20111115	1230	1248	>1250	M1.9/SF	.012	S17E30L338	11346								R	/1242/025-050			
20111115	2227	2235	>2242	M1.1/1F	.0061	N20W80L087	11348							0000/0294/072/314					
20111225	1811	1816	1911	M4.0/1N	.011	S22W26L225	11387	12000			120	II/2	IV/3	1924/0239/065/231	R2	/1818/025-050	26	0135/0003	
20111226	0213	0227	0254	M1.5/1N	.012	S21W33L225	11387								R	/0224/025-050			
20111226	2012	2030	2049	M2.3/SF	.022	S21W42L225	11387								R2	/2018/025-050			
20111229	1340	1350	1457	M1.9/1F	.015	S25E69L086	11389							2224/0260/066/299	R2	/2018/025-050			
20111229	2143	2151	2216	M2.0/SF	.012	S27E65L086	11389								R3	/1347/012-025			
20111230	0303	0309	>0313	M1.2/SN	.004	S27E64L086	11389							2312/0768/177/119	R	/2150/025-050			
20111231	1309	1315	1338	M2.4/SF	.007	S25E44L086	11389				150				R	/1315/025-050			
20111231	1616	1626	1634	M1.5/1F	.0085	S26E42L086	11389								R	/1625/025-050			

2012

D A T E		T I M E			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME	X-ray hard		PROTONS		Attendant	
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to / v /da / pa	An / tm / Emax,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu	km/s			keV	D tmax/Ipr				
20120114	1314	1318	>1320	M1.4	.003	N15E73L213	11401								R	/1321/012-025				
20120117	0441	0453	0519	M1.0/1N	.011	N18E54L213	11401							0548/0172/026/094	g					
20120118	1904	1912	2018	M1.7/1N	.015	N17E33L213	11401							2048/0180/028/104	g					
20120119	1344	1605	2001	M3.2/SF	.270	N30E30L211	11402						II/1	IV/1	1436/1120/360/020	g			DSF	
20120123	0338	0359	0553	M8.7/2B	.200	N28W21L211	11402	4000			5100		IV/2	0400/2175/360/326		20	~21/0002		DSF	
20120127	1737	1837	1913	X1.7/2F	.320	N27W71L211	11402	1100			810		II/3	IV/2	1827/2508/360/296	g			n DSF	
20120206	1931	2000	>2017	M1.0/SF	.019	N19W60L056	11410							2148/0274/069/041?	g					
20120302	1729	1746	>1807	M3.3/SF	.049	N16E83L301	11429				51			1800/0710/206/059	R2	/1757/100-300				
20120304	1029	1052	>1216	M2.0/1N	.092	N19E61L301	11429	1400			2500		IV/2	1100/1306/360/052	R3	/1118/100-300	05	~18/0003		
20120305	0230	0409	0643	X1.1/2B	.370	N17E52L301	11429	57000			12000			0400/1531/360/061	R3	/0256/100-300				
20120305	*1910	1916	>1921	M2.1/1B	.0078	N14E44L301	11429								g(5/04-6/02)					
20120305	*1927	1930	1950	M1.8/1B	.0027	N14E44L301	11429								g					
20120305	2226	2234	>2242	M1.3	.0073	N16E23L301	11429								g					
20120306	0022	0028	0039	M1.3/SN	.0037	N16E41L301	11429													
20120306	0136	0144	>0150	M1.2	.0059	N16E39L301	11429													
20120306	0401	0405	0419	M1.0/1N	.0026	N16E39L301	11429							0448/0536/111/022	R	/0404/012-025				
20120306	0752	0755	>0800	M1.0	.0027	N17E40L301	11429							0812/0599/107/043?	g(6/06-8/01)					
20120306	1223	1241	1318	M2.1/1N	.022	N18E36L301	11429							1448/0407/046/045?	g					
20120306	2104	2111	>2114	M1.3	.0049	N16E30L301	11429							2057/0176/043/288?	g					
20120306	2249	2253	>2311	M1.0	.010	N16E30L301	11429								g					
20120307	0002	0024	0349	X5.4/3B	.670	N17E27L301	11429	300000			7200		II/2	IV/2	0024/2684/360/057	g			07 1540/6530	
20120307	0105	0114	0130	X1.3/SF	.150	N22E12L315	11430							0130/1825/360/082	g					
20120309	0322	0353	0618	M6.3/SF	.130	N15W03L301	11429	6200					II/2	IV/1	0426/0950/360/029	R7	/0428/050-100			

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant					
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	tm	E _{max} ,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu		km/s		keV		D tmax/Ipr								
2012	11	13	0542	0550	>0554	M2.5	.0093	S26E44L207			110							R	/0548/050-100						
2012	11	13	2050	2054	2109	M2.8/SN	.0061	S22E31L207			1100	220													
2012	11	14	0359	0404	>0407	M1.1	.0025	S23E27L207			220							R	/0404/025-050		15	0155/0009			
2012	11	20	1236	1241	>1246	M1.7	.0063	n06e20L136			40	64						R	/1241/100-300						
2012	11	20	1921	1928	>2010	M1.6/SN	.0052	N06E25L136			130	90						R2	/1926/025-050						
2012	11	21	0645	0656	0722	M1.4/1N	.012	N06E10L136				58	II/2	IV/1	0838/0410/142/068			R	/0654/025-050						
2012	11	21	1510	1530	>1538	M3.5/	.026	N06E01L136					II/2	IV/2	1600/0529/360/194			R	/1556/025-050						
2012	11	27	1552	1557	1603	M1.6/SF	.0053	N05W73L136							0836/0394/076/282			R	/1824/006-012						
2012	11	27	2105	2126	2142	M1.0/SF	.0054	S14W41L087										R3	/2125/025-050						
2012	11	28	2120	2136	2200	M2.2/SN	.019	S14W57L087										R2	/2134/025-050					DSF	

2013

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant					
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	tm	E _{max} ,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu		km/s		keV		D tmax/Ipr								
2013	01	05	0926	0931	>0934	M1.7	.0042	N20E88L184																	
2013	01	11	0843	0911	>0917	M1.2	.0093	N05E36L152			280		II/1	IV/1				R2	/0909/025-050						
2013	01	11	1451	1507	>1524	M1.0/1F	.014	N06E33L152							1512/0370/063/062			R	/1520/006-012						
2013	01	13	0045	0050	>0052	M1.0	.0019	N19W28L184							0212/0169/030/234?										
2013	01	13	0835	0838	>0840	M1.7	.002	N19W28L184			10000	140	II/2	IV/2	0848/0696/046/296?			R	/0841/012-025						
2013	02	17	1545	1550	1559	M1.9/SF	.0022	N12E20L036			6700	340			1800/0286/017/162?			R	/1550/100-300						
2013	03	05	0747	0754	0759	M1.2/SF	.004	S15W54L261			100		II/1												
2013	03	15	0546	0658	>0833	M1.1/1F	.023	N11E12L077			410	150	II/2		0712/1063/360/112			R3	/0709/012-025		17	0700/0016			
2013	03	31	2142	2204	>2236	M1.6	.033	N09W88L077							2224/0561/192/271			R	/2202/012-025						
2013	04	05	1734	1748	>1804	M2.2	.025	N07E88L077				100						R	/1808/012-025						
2013	04	11	0655	0716	0906	M6.5/3B	.074	N09E12L077			2700	470	II/3	IV/3	0724/0861/360/085			R3	/0708/025-050		11	1645/0114			
2013	04	12	1952	2038	>2046	M3.3	.024	N21W42L110										R	/2036/025-050						
2013	04	22	1022	1029	>1031	M1.0	.0023	N13W24L323			5000				1112/0402/074/322										
2013	05	02	0458	0510	0527	M1.1/1N	.0088	N10W26L189			350	240	II/2		0548/0350/056/002			R	/0507/050-100						
2013	05	03	1639	1655	>1722	M1.3/2N	.025	N10W38L189				130			1800/0858/274/042?			R2	/1646/025-050						
2013	05	04	1724	1732	1745	M5.7/SF	.041	N16E81L075				77	II/1		2000/0377/010/078?			R	/1734/006-012						
2013	05	05	1742	1744	>1817	M1.4	.003	N11E46L075			3900							R2	/1756/025-050						
2013	05	10	0044	0057	0108	M3.9	.036	N12E89L340																	
2013	05	10	1237	1256	1304	M1.3	.013	N12E83L340																	
2013	05	12	2017	2032	>2103	M1.9	.037	N10E89L292			65				2036/0462/060/095			R	/2046/012-025						
2013	05	12	2237	2244	>2252	M1.2	.0076	N10E86L292										R	/2242/025-050						
2013	05	13	0153	0217	>0232	X1.7	.23	N11E89L292			920	320	II/1		0200/1270/360/064			R	/0213/050-100		17	1720/0041			
2013	05	13	1157	1203	>1209	M1.3	.0059	N11E87L292										R	/1202/025-050						
2013	05	13	1548	1605	1637	X2.8/1N	.23	N14E85L292			54	520	II/2	IV/2	1608/1850/360/063			R2	/1604/300-800						
2013	05	13	2359	0111	>0120	X3.2/2B	.22	N12E77L292			2200	640	II/1	IV/1	0126/2625/360/089			R3	/0018/012-025		14	1800/0001			
2013	05	15	0124	0148	0230	2N/X1.2	.12	N12E64L292			430	440	II/1	IV/2	0148/1366/360/093			R	/0144/050-100		17	1720/0041			
2013	05	16	2136	2153	2252	M1.3/1N	.012	N13E41L292										R3	/2152/012-025						
2013	05	17	0843	0857	1056	M3.2/2B	.044	N12E57L292			1500	450	II/2	IV/2	0912/1345/360/050			R4	/0909/050-100						
2013	05	20	0516	0525	>0603	M1.7	.033	N09E89L204										R3	/0525/050-100?						
2013	05	22	1235	1332	1555	3N/M5.0	.14	N15W70L340			140	370	II/2	IV/1	1326/1466/360/287			R3	/1320/050-100		23	0650/1660			
2013	05	31	1952	2000	2021	M1.0/SB	.005	N13E43L098					II/2	IV/1	2036/0388/100/095			R	/1959/012-025						
2013	06	05	0814	0857	1012	M1.3/1F	.034	S32W51L130			460	71	IV/1		0912/0505/214/190			R2	/0908/012-025						

DATE		TIME			CLASS	COORDINATES		AR	RADIO MHz		DYNAMIC EVENT	CME	X-ray hard		PROTONS	Attendant									
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	/tm	/E _{max}	E>10MeV	GLE	n	phenomena	
					X-ray/opt	J·m ⁻²				sfu				km/s			keV	D tmax/Ipr							
20130607	2211	2249	>2304	M5.9	.068	S32W89L130	11762				160			2312/0770/150/209				R2	/2217/012-025						
20130621	0230	0314	0357	M2.9/1F	.069	S16E73L165	11777						IV/1	0312/1900/207/107				R4	/0303/025-050		22	1700/0006			
20130623	2048	2053	>2059	M2.9/1N	.0025	S15E66L129	11778							2124/0339/101/133				R	/2054/050-100		24	0520/0014			
20130703	0700	0708	0723	M1.3/SF	.0019	S11E82L348	11787				58	II/2	IV/2	0724/0807/360/105				R2	/0708/025-050						
20130812	1021	1041	1130	M1.5/SN	.001	S17E19L242	11817							1200/0297/188/165				R2	/1041/025-050						
20130817	*1816	1824	2141	2B/M3.3	.021	S07W30L218	11818				110	II/2	IV/2	1912/1202/360/274				R	/2027/006-012						
20130817	*1849	1933	>1954	2B/M1.4	.046	S05W30L218	11818				260	150	II/2	IV/1	1912/1202/360/274										
20131009	0123	0148	>0156	M2.8	.025	S23E71L143	11865							0212/0407/123/096				R	/0152/012-025						
20131011	0701	0725	>0745	M1.5	.031	N21E87L103	11868				980	160	II/2	IV/2	0724/1200/360/092				R	/0720/100-300MeV					
																		see http://iopscience.iop.org/article/10.1088/2041-8205/805/2/L15							
20131013	0012	0043	0105	M1.7	.031	S22E17L143	11865				100		II/1	0125/0478/194/157				R	/0034/012-025						
20131015	0826	0838	0932	M1.8/SN	.001	S22W13L143	11865					87		0936/0223/026/196				R	/0913/012-025						
20131015	2331	2336	2354	M1.3/1F	.004	S23W20L143	11865							g				R	/2336/025-050						
20131017	1509	1541	>1558	M1.2	.025	S09W63L164	11861				170			1648/0101/030/269				R	/1531/012-025						
20131022	0014	0022	0030	M1.0/SF	.053	N06E17L027	11875											R	/0020/025-050						
20131022	1444	1520	>1528	SF/M1.0	.015	N07E07L027	11875							1524/0351/071/087				R2	/1453/012-025						
20131022	2115	2120	2130	M4.2/1B	.0075	N04W01L027	11875				3200	220	II/2	2148/0459/360/190				g							
20131023	*2041	2053	0049	SF/M2.7	.017	N07W07L027	11875							2312/0162/093/120?				R2	/2224/012-025						
20131023	*2333	2343	>2347	SF/M1.4	.006	N07W07L027	11875							2312/0162/093/120?				R	/2342/025-050						
20131023	*2358	0008	>0016	SF/M3.1	.023	N06W08L027	11875																		
20131024	0021	0030	0048	M9.3/1N	.048	S10E08L009	11877				470		II/1	IV/1	0125/0339/360/217										
20131024	*0942	1009	~1157	2B/M2.5	.017	N07W13L027	11875					110	IV/1	g				R	/1046/006-012						
20131024	*1030	1033	>1037	2B/M3.5	.0080	N06W11L027	11875							g				R4	/1046/006-012						
20131025	0248	0302	>0312	M2.9	.025	S07E76L293	11882						II/2	IV/1	0324/0344/121/086				R	/0259/050-100					
20131025	0753	0801	>0809	X1.7	.090	S08E73L293	11882				5200	610	II/2	IV/1	0812/0587/360/109				R	/0800/100-300					
20131025	0943	1012	1046	M1.0/SF	.021	S03E68L293	11882							g				R3	/1011/012-025						
20131025	1451	1503	>1512	X2.1	.16	S06E69L293	11882				8800	370	II/2	IV/2	1512/1081/360/068				R	/1501/100-300					
20131025	1702	1709	>1716	M1.3	.008	S08E67L293	11882							g				R	/1708/025-050						
20131025	1905	1921	1958	M2.3/SF	.0091	S06E66L293	11882							2236/0149/040/262?				R3	/1944/012-025						
20131025	2050	2058	2204	1N/M1.9	.016	S07E64L293	11882							2236/0366/024/095				R4	/2118/012-025						
20131026	0559	0606	0715	1B/M2.3	.019	S09E61L293	11882				100			0700/0315/060/283?				R6	/0605/025-050						
20131026	0917	0937	>0948	M1.5	.017	S10E58L293	11882				100		II/2	0948/0460/141/286?				R2	/0926/050-100						
20131026	1011	1117	~1212	1N/M1.8	.036	S05E58L293	11882				230	380		1124/0796/360/075				R7	/1104/025-050						
20131026	1924	1927	1938	M3.1/SF	.01	S09E81L261	11884				830			1912/0822/207/082											
20131026	1949	1953	>1958	M1.0/	.004	S07E53L293	11882				210							R	/1952/012-025						
20131027	1233	1248	>1252	1F/M3.5	.016	N06W63L027	11875				150														
20131028	0141	0203	0231	X1.0/2N	.084	N04W66L027	11875				120	120	II/2	0224/0695/360/296				R2	/0201/100-300		29	0000/0005			
20131028	0432	0441	0453	M5.1/2B	.021	N08W71L027	11875						II/2	IV/1	0448/1201/156/313										
20131028	1132	1153	1336	M1.4/2N	.040	S16W44L009	11877							1212/0681/027/282				R7	/1201/012-025						
20131028	*1400	1405	1418	M2.8/1N	.014	N06W75L027	11875					55		1412/1073/093/303											DSF
20131028	*1446	1501	1523	M2.7/1N	.0098	S08E28L293	11882							1536/0812/360/086				R	/1512/050-100						
20131028	*1507	1515	>1613	M4.4/1N	.026	S06E28L293	11882				2200	170	II/2	IV/1	1536/0812/360/086				R2	/1613/012-025					
20131028	2048	2057	>2102	M1.5	.0068	N07W83L027	11875				120			2125/0771/142/301				R	/2056/100-300						
20131029	2142	2154	>2201	X2.3	.14	N05W89L027	11875				3900		II/1	IV/1	2200/1001/360/249				R	/2214/012-025		30	0925/0005		
20131031	1336	1351	>1402	M1.9	.019	S12W88L352	11877							1412/0121/018/257?				R	/1359/012-025						
20131101	1946	1953	2055	M6.3/1B	.023	S11E01L261	11884					290		2136/0122/065/026								02	2000/0003		
20131102	2213	2221	2248	M1.6/1F	.0064	S12W11L261	11884							2312/0408/037/004				R	/2220/025-050						
20131103	0516	0522	0540	M5.0/2B	.013	S12W16L261	11884											R2	/0539/012-025						
20131105	0812	0818	0824	M2.5/1F	.0054	S17E48L170	11890					53		0824/0850/197/145											
20131105	1808	0813	>0817	M1.0	.003	S12E46L170	11890				2100	110		1948/0402/012/025?				R2	/1811/050-100						
20131105	2207	2212	2307	X3.3/1B	.066	S12E46L170	11890				79000	910	II/2	IV/1	2236/0562/195/141				R	/2259/006-012					

DATE		TIME			CLASS	COORDINATES		AR	RADIO MHZ		DYNAMIC EVENT		CME	X-ray hard		PROTONS		Attendant						
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	/tm	/E _{max}	E>10MeV	GLE	n	phenomena
					X-ray/opt	J·m ⁻²				sfu			km/s	keV		D	tmax/Ipr							
20140224	1200	1205	>1210	M1.3	.0052	S12W18L207	11982							1336/0266/083/106	R	/1158/006-012								
20140225	0039	0049	0210	X4.9/2B	.43	S12E82L110	11990	10000	3700	II/3	IV/2		0126/2147/360/073	R3	/0037/300-800	28	0845/0103							WL DSF
20140226	<1452	1501	>1528	1N/M1.1	.0074	S13W44L207	11982							1548/0207/080/265	R	/1506/012-025								
20140228	0044	0048	0056	M1.1/SN	.0019	S24E53L094	11991																	
20140301	1318	1333	>1340	M1.1	.011	S12W88L207	11982							1512/0101/078/266	R	/1336/012-025								
20140302	2311	2319	>2326	M1.1/SF	.0059	N15W74L176	11986											R	/2307/012-025					
20140303	1554	1558	1604	M1.2/SN	.0026	N05W36L136	11989					89												
20140305	0206	0210	>0212	M1.0	.002	S27W08L094	11991	130					0448/0428/160/291	R3	/0450/012-025									
20140308	2326	2341	>2350	M1.4	.011	S18E64L323	12002											R	/2328/025-050					
20140309	1326	1358	1425	SN/M1.0	.0055	S17E58L323	12002											R3	/1345/012-025					
20140309	2013	2028	2101	M1.0/SF	.0092	S19E54L323	12002											R3	/2008/025-050					
20140310	0019	0026	~0100	M1.2/SF	.0059	S19E51L323	12002											R3	/0039/006-012					
20140310	0402	0408	>0413	M1.0	.0038	S18E48L323	12002											R2	/0358/012-025					
20140310	1521	1528	>1532	M1.7	.0069	S20E43L323	12002																	
20140310	2245	2300	2333	M1.4/SF	.016	N14W51L051	11996											R2	/2252/003-006					
20140311	0344	0350	0429	M3.5/1F	.013	N13W55L051	11996		110				0400/0198/016/325	R2	/0344/025-050									
20140311	1158	1207	>1214	M1.7	.010	S25W86L093	11991											R	/1209/050-100					DSF
20140312	1055	1105	1139	M2.5/SN	.012	N13W69L051	11996																	
20140312	2228	2234	2250	M9.3/SB	.031	N15W78L051	11996		140				0125/0564/077/277	R	/2228/050-100									
20140313	1903	1919	>1930	M1.3	.012	N15W87L051	11996											R	/1905/025-050					
20140320	0342	0356	0444	M1.7/1F	.016	S12E75L168	12014				II/1	IV/1	0436/0740/360/140	R	/0334/012-025									
20140322	0658	0702	0710	M1.1/1F	.0022	S10W71L277	12011						0648/0340/168/279?	R	/0657/025-050									
20140328	1904	1918	1939	M2.0/SN	.013	N11W21L145	12017	250			II/2		2012/0246/027/203	R	/1911/025-050									
20140328	2344	2351	>2358	M2.6	.013	N10W22L145	12017	2100			II/2		0012/0410/018/253	R	/2347/025-050									
20140329	1735	1748	1816	X1.0/2B	.042	N11W32L145	12017	10000	360		II/3		1812/0528/360/325	R	/1735/100-300	29	2230/0003							
20140330	1147	1155	1224	1N/M2.1	.015	N08W43L145	12017	200	120		II/2		1224/0487/192/321	R	/1216/006-012									
20140331	0720	0807	>0818	M1.4	.019	S13W76L168	12014					IV/1	0836/0234/123/271	R3	/0756/025-050									
20140402	1318	1405	1535	M6.5/2B	.14	N14E53L015	12027	520	3700		II/1	IV/2	1336/1471/360/060	R2	/1332/050-100	05	0300/0001							DSF
20140416	1954	1959	2020	M1.0/1N	.0038	S14E09L224	12035	10000			II/2		2000/0764/061/166	R	/1955/012-025									
20140418	1231	1303	>1320	M7.3	.11	S18W33L242	12036	160	1000		II/2	IV/2	1326/1203/360/238	R	/1250/050-100	19	0105/0058							
20140425	0017	0027	>0038	X1.3/SF	.11	S15W89L204	12046				II/2		0048/0456/296/269	R	/0012/050-100									
20140506	0841	0903	0937	M1.8/SF	.033	S15W84L056	12051						0848/0245/093/244	R	/0916/012-025									
20140506	2201	2209	>2220	M1.0/SF	.0077	S11W89L056	12051						2218/0831/160/265	R	/2158/025-050									
20140507	1546	1629	>1703	SF/M1.2	.029	S11W89L047	12051						1624/0923/360/260	R	/1635/012-025									DSF
20140508	0920	1007	~1125	M5.3/2B	.047	N08E54L258	12056		390				1012/0184/031/145	R2	/1026/025-050									
20140524	1826	1835	1910	M1.3/SF	.0081	S19W53L142	12065		229				1948/0490/051/271											
20140603	0358	0409	0454	M1.3/2N	.0086	S05E30L301	12077						0446/0540/031/189	R	/0359/012-025									
20140606	1926	1931	1941	M1.4/SF	.0025	S12E25L269	12080											R	/1931/025-050					
20140610	1136	1142	1155	X2.2/SF	.047	S15E80L154	12087	4400	1400		II/1		1148/0925/087/102	R	/1143/050-100									
20140610	1236	1252	1317	X1.5/1F	.140	S17E82L154	12087	260	530			IV/2	1330/1469/360/156	R	/1235/050-100									
20140611	0530	0534	>0536	M1.8/SN	.0031	S12W35L261	12080	590	100				0736/0491/081/233	R	/0531/050-100									
20140611	*0800	0809	0952	M3.0/2B	.017	S14E68L154	12087	300	130			IV/1	0824/0773/103/090	R2	/0839/025-050									
20140611	*0859	0906	>0910	X1.0/2B	.033	S18E65L154	12087	1800	190				0924/0829/030/125	R3	/0858/100-300									
20140611	2053	2103	2120	M3.9/SF	.024	S21E58L154	12087	3000	420				2124/0490/058/119	R	/2059/025-050									
20140612	0414	0421	0432	M2.0/SF	.0082	S16E55L154	12087						0436/0609/072/115	R	/0408/025-050									
20140612	0923	0937	1005	M1.8/1B	.008	S25W53L254	12085	150	87				0948/0517/032/247	R3	/0939/012-025									
20140612	1014	1021	1052	M2.7/1F	.013	S20E52L154	12087	450					1048/0472/054/124	R2	/1024/025-050									
20140612	1803	1813	1831	M1.3/SF	.011	S19E48L154	12087	220	31				1848/0396/035/123	R	/1803/025-050									
20140612	1956	2003	2014	M1.1/SF	.0005	N17E05L196	12089																	
20140612	2101	2113	2124	M1.0/SF	.0071	S22E49L154	12087	180					2139/0522/031/124	R	/2044/012-025									
20140612	2134	2216	2324	M3.1/1F	.095	S18E45L254	12087				II/2		2212/0684/186/228	R4	/2220/012-025	13	0300/0001							

DATE			TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant				
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L		245	2695	RADIO SWEEP	to	v	/da	/pa	An	tm	E _{max} ,	E>10MeV	GLE	n	phenomena
						X-ray/opt	J·m ⁻²							sfu	km/s		keV		D t _{max} /I _{pr}						
20140613	0744	0756	0818	1N/M2.6	.0091	S18W01L154	12087						II/2			0824/0370/042/126	R	/0749/025-050							
20140614	1923	1929	>1934	M1.4	.0054	S12E89L086	12093									1948/0732/139/112	R	/1925/006-012							
20140615	1110	1139	>1150	M1.1	.018	S22W89L254	12085									1300/0958/190/221?	R	/1119/012-025							
20140615	2350	0001	>0017	M1.0	.011	S10E08L154	12087										R	/2350/012-025							
20140701	1105	1123	>1159	M1.4	.035	S12E48L269	12104								1148/0614/195/008	g									
20140708	1604	1620	1716	2B/M6.5	.059	N12E56L161	12113	3100	150	II/2	IV/1				1636/0773/360/067	g							DSF		
20140709	0020	0026	>0033	M1.2	.0059	S15E64L149	12114	690		II/1					0048/0672/130/062	g									
20140710	2229	2234	>2237	M1.5	.0040	N14W86L261	12106	140									g								
20140731	1101	1114	>1121	M2.5	.017	S10E51L226	12130								1136/0482/014/203	g									
20140801	1443	1448	>1457	M2.0	.011	S09E48L226	12130	46	340						1512/0214/053/116	g									
20140801	1755	1813	1848	M1.5	.035	S10E11L248	12127		97	II/2	IV/1				1836/0789/360/131	g									
20140821	1319	1331	>1342	M3.4/SF	.026	N15E86L276	12149	130			IV/2				1412/0427/059/030	R	/1339/012-025								
20140822	~0609	0628	>0718	1F/M1.2	.0073	N12E73L276	12149								0824/0296/010/121	R	/0613/025-050								
20140824	1200	1217	1310	M5.9/2B	.039	S07E75L255	12151	28	410	II/2					1236/0551/360/100	R	/1149/006-012								
20140825	1446	1511	1639	M2.0/1B	.032	N05W36L343	12146	100	150	II/2	IV/1				1536/0555/360/270	R11/1534/006-012									
20140825	2006	2021	>2029	M3.9/1F	.03	N07W43L343	12146	84	82						2048/0711/177/277				25	2300/0001					
20140903	1320	1354	>1423	M2.5/SF	.066	S14W18L206	12152	60							1400/0468/059/097	g									
20140906	1650	1709	1727	M1.1/SF	.015	S14E53L100	12157								1724/0514/170/015	g									
20140908	2312	0029	0159	M4.5/1N	.22	N12E29L085	12158	1000	170	II/1					0006/0920/360/059	R4	/0012/025-050								
20140910	1659	1745	2240	2B/X1.6	.38	N14E02L085	12158	3800	1300	II/2	IV/2				1800/1267/360/175?	R12/1813/012-025			12	1355/0126					
20140911	1520	1526	>1531	M2.1	.0086	N15E88L356	12166	210								R	/1525/025-050								
20140911	2101	2126	>2130	M1.4	.007	N17E82L356	12166								2212/0616/118/277	R2	/2108/012-025								
20140914	0203	0216	0426	M1.5/2N	.022	N14E61L356	12166								0248/0447/155/273	R4	/0211/025-050								
20140918	0837	0841	>0853	M1.2/SN	.0044	N08E70L290	12169	16000	72	II/2					0937/0285/050/033	R	/0842/050-100								
20140923	2301	2316	0010	2B/M2.3	.022	S14E33L250	12173	380	250	II/2	IV/1				2336/0331/134/095										
20140927	0832	0837	>0840	M1.0	.0034	S14E89L151	12178								0912/0403/026/094										
20140928	0239	0258	0441	M5.1/2B	.079	N16W38L263	12175	160	220	II/1	IV/1				0324/0215/060/212	R	/0232/025-050								
20140928	1634	1733	1800	M1.0/SF	.029	S15W27L242	12172		19						1848/0288/014/327	R5	/1702/025-050								
20141002	1710	1744	>1815	M1.5/SF	.038	S18W76L242	12172								1800/0245/089/240	R2	/1722/012-025						DSF		
20141002	1849	1901	1925	M7.3/1F	.074	S17W82L250	12173			II/1	IV/1				1912/0513/159/248	R	/1856/025-050						DSF		
20141009	*0129	0143	0217	1F/M1.3	.0046	S15W45L120	12182								0348/0180/110/262	R2	/0128/025-050								
20141009	*0154	0158	>0202	M1.4/1F	.0044	S15W45L120	12182									R	/0154/025-050								
20141009	0641	0659	0721	1N/M1.2	.0076	S18W46L120	12182									R	/0648/025-050								
20141014	1821	1837	>1846	M1.1	.0097	S12E88L252	12192		1300						1848/0848/360/090										
20141014	1907	1921	>0019	M2.2	.31	S11E88L252	12192	160	180							R3	/1907/025-050								
20141016	1258	1303	>1305	M4.3	.0082	S13E88L252	12192	9000	190						1326/0777/033/096	R	/1258/050-100								
20141018	0702	0758	>0849	M1.6/SF	.066	S13E71L252	12192																		
20141019	0417	0503	0639	X1.1/SN	.39	S10E58L252	12192								0448/0139/077/116	R	/0547/006-012								
20141020	0854	0911	1003	1N/M3.9	.028	S14E42L252	12192		47							R4	/0958/012-025								
20141020	*1600	1637	2023	M4.5/2N	.099	S14E37L252	12192		190						1724/0161/029/093	R3	/1619/025-050								
20141020	*1855	1902	>1904	M1.4/2N	.0052	S15E46L252	12192	14000	120						1912/0187/234/167	R	/1857/050-100								
20141020	*1953	2004	>2013	M1.7/2N	.015	S14E36L252	12192									R	/1947/025-050								
20141020	2211	2255	0007	1N/M1.2	.017	S14E36L252	12192									R8	/2239/025-050								
20141021	1335	1338	>1340	M1.2	.0014	S14E36L252	12192	42000	510	II/2						g									
20141022	0116	0159	>0228	M8.7	.21	S13E21L252	12192		580		IV/1					R	/0112/050-100								
20141022	0511	0517	>0521	M2.7	.01	S15E14L252	12192									R	/0457/012-025								
20141022	1402	1428	2230	X1.6/2B	.34	S14E13L252	12192		200							R8	/1424/100-300								
20141022	1551	1557	>1603	M1.4	.0075	S11E88L164	12197			II/1					1612/0434/080/100	R	/1551/025-050								
20141023	0944	0950	>0956	M1.1/1F	.0053	S16E03L252	12192									g									
20141024	0737	0748	>0753	M4.0	.023	S19W05L252	12192	1200	150	II/1	IV/1				0800/0677/096/203	R	/0736/050-100								
20141024	2050	2141	0014	3B/X3.1	.86	S16W21L252	12192		210						2148/0184/035/210	R3	/2106/050/100								

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT	CME		X-ray hard		PROTONS		Attendant								
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	/tm	/E _{max}	E>10MeV	GLE	n	phenomena			
						X-ray/opt	J·m ⁻²				sfu				km/s	keV		D	t _{max} /I _{pr}								
20141025	1338	1708	~0007	3E/X1.0	.39	S16W31L252	12192					160															
20141026	1004	1056	1253	2B/X2.0	.34	S18W40L252	12192					200															
20141026	1708	1717	>1730	M1.0	.0099	S13W38L252	12192					110															
20141026	1807	1815	>1820	M4.2	.023	S14W37L252	12192																				
20141026	1843	1849	>1856	M1.9	.01	S13S38L252	12192																				
20141026	1959	2021	>2045	M2.4	.052	S15W45L252	12192				400																
20141027	*0001	0034	>1022	3B/M7.1	.10	S14W44L252	12192																				
20141027	*0144	0202	>0211	M1.0/3B	.013	S14W44L252	12192																				
20141027	*0335	0341	>0348	M1.3/3B	.0073	S13W45L252	12192																				
20141027	*0552	0715	1348	2B/C9.6	.0037	S18W48L252	12192																				
20141027	*0959	1009	>1026	2B/M6.7	.093	S18W48L252	12192																				
20141027	1404	1447	<1531	2B/X2.0	.45	S17W52L252	12192				110			1512/0170/055/216?													
20141027	~1524	1740	0009	1F/M1.4	.0086	S19W56L252	12192																				
20141028	*0215	0242	0427	M3.4/1B	.076	S14W61L252	12192																				
20141028	*0323	0332	>0341	M6.6/1B	.052	S14W61L252	12192																				
20141028	1354	1406	>1423	M1.6/SF	.020	S18W73L252	12192				29																
20141029	0603	0820	>0852	M1.0/SF	.076	S14W74L252	12192																				
20141029	0954	1001	>1006	M1.2	.0055	S18W77L252	12192																				
20141029	1419	1433	1507	SF/M1.4	.019	S16W81L252	12192							1512/0192/101/264													
20141029	1606	1620	>1633	M1.0	.012	S14W82L252	12192																				
20141029	1847	1850	>1852	M1.3	.0019	S13W47L252	12192																				
20141029	2118	2122	>2125	M2.3	.0049	S09W88L252	12192																				
20141030	0034	0037	>0040	M1.3	.0027	S14W81L252	12192																				
20141030	0119	0135	>0156	M3.5	.047	S14W86L252	12192																				
20141030	0417	0428	0439	M1.2/SF	.009	S16W89L252	12192																				
20141103	1123	1153	>1217	M2.2	.042	N17E90L015	12205						II/2	1200/0447/196/058													
20141103	2215	2240	2322	M6.5/1F	.066	N14E89L012	12205				180	II/1	2313/0638/155/061														
20141104	*0759	0838	>0851	M2.6/SF	.071	N15E82L012	12205							0848/0627/175/065													
20141104	*0842	0904	0935	1F/M2.3	.029	N15E82L105	12205																				
20141105	0926	0947	~1033	M7.9/1N	.052	N20E68L012	12205				8900	240	II/2	1000/0386/182/063													
20141105	1850	1944	>2018	M2.9/1N	.078	N17E65L012	12205						II/1	1948/0608/203/077													
20141106	0129	0139	0317	M3.2/2N	.03	N15E58L012	12205							0200/0529/035/070													
20141106	0329	0346	0512	1N/M5.4	.071	N17E58L012	12205						II/1	0400/0641/210/082													
20141106	2153	2216	2252	M2.5/1N	.033	N14E45L012	12205				190	200		2236/0403/040/046													
20141107	*0201	0249	0551	2N/M2.7	.076	N17E50L012	12205				240			0428/0516/088/006													
20141107	*0412	0425	>0438	2N/M2.0	.026	N17E50L012	12205							0439/0672/060/114													
20141107	0943	1022	>1030	SF/M1.0	.0069	N15E43L012	12205																				
20141107	1453	1726	2035	3B/X1.6	.15	N17E40L012	12205						II/2	1808/0795/293/075													
20141109	1524	1532	1615	M2.3/1B	.011	N18E14L012	12205							1624/0388/077/303													
20141115	1140	1203	~1240	M3.2/SB	.024	S09E63L264	12209				3900	229		1224/0145/048/092													
20141115	2038	2046	>2050	M3.7	.013	S13E63L264	12209				1600	240		2124/0150/175/142													
20141116	1735	1748	>1757	M5.7	.041	S12E46L264	12209					300		1824/0133/137/120													
20141201	0626	0641	0718	M1.8/1N	.023	S21E17L083	12222																				
20141204	0736	0810	0932	1N/M1.3	.011	S24W27L083	12222																				
20141204	1805	1825	>1856	M6.1	.12	S21W28L083	12222																				
20141205	1133	1225	>1247	M1.5	.031	S23W41L083	12222																				
20141213	0513	0520	0525	M1.5	.0064	S09E84L217	12241							0548/0435/077/045													
20141214	1925	1933	2008	M1.6/SF	.0078	S19E44L238	12242						II/2	1948/0626/148/118													
20141217	0055	0110	0213	1N/M1.5	.014	S25E10L237	12242							0200/0869/108/091													
20141217	0130	0150	0255	SN/M1.1	.0083	S11E33L217	12241																				
20141217	0423	0451	0638	2B/M8.7	.19	S20E09L237	12242				100	320	II/3	0512/0260/033/359													

14|1020/0003

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant				
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	/tm	/Emax,	E>10MeV	GLE	n	phenomena
						X-ray/opt	J·m ⁻²				sfu				km/s	keV		D tmax/Ipr						
20150312	1209	1214	>1218	M1.4	.0055	S18E05L196	12297					220						R	/1212/050-100					
20150312	1345	1404	1433	2B/M4.2	.021	S15E06L196	12297	2300			53		IV/1					R	/1353/012-025					
20150312	2144	2151	>2156	M2.7	.012	S15E01L196	12297	530			230		II/1					R	/2149/025-050					
20150313	0347	0401	>0416	M1.2	.014	S17E04L196	12297							0436/0294/009/311?				R	/0405/012-025					
20150313	0549	0607	>0612	M1.8	.013	S14W02L196	12297	280						0848/0323/006/212				R	/0606/025-050					
20150314	0423	0440	0523	M1.3/2N	.014	S14W12L196	12297											R2	/1020/012-025					
20150315	0936	0940	1012	M1.0/SN	.0040	S20W24L196	12297											R2	/2254/025-050			16 0750/0008		
20150315	2242	2322	>2338	M1.2	.027	S19W32L196	12297							2324/0284/015/290				R4	/1052/025-050					
20150316	1039	1058	1151	M1.6/2N	.025	S17W39L196	12297							1124/0441/019/225				R3	/2314/050-100					
20150317	2249	2334	0045	M1.0/2N	.014	S21W56L196	12297	1500			110		II/2	2348/0510/110/239				R3	/1443/025-050					
20150408	1437	1443	1447	M1.4/1B	.0040	S14W04L214	12320	110						1648/0346/012/282?				R	/0958/012-025					
20150412	0851	0950	>1044	M1.1	.043	N11E18L094	12321	160						0948/0336/123/068				R	/0719/050-100					
20150421	0708	0721	0731	M1.0/SF	.0064	N09W80L116	12322	210										R	/1651/050-100?					
20150421	1017	1040	>1059	M2.2	.037	N19E90L309	12333?							1036/2039/191/044				R	/2143/100-300					
20150421	1141	1157	1226	M2.2/SF	.011	N10W84L116	12322							1148/0698/083/297				R3	/155/100-300					
20150421	1655	1700	>1709	M2.1/SF	.012	N13W84L116	12322											R	/1651/050-100?					
20150421	*2139	2145	>2155	M1.8	.011	N10W80L116	12322											R	/1651/050-100?					
20150421	*2158	2201	>2204	M1.2	.0028	N09W80L116	12322											R	/1651/050-100?					
20150422	0830	0844	>0858	M1.1/SF	.012	S09E05L116	12332							0912/0536/008/178?				R2	/0834/100-300					
20150423	0918	1007	>1110	M1.1	.057	N07W80L121	12322							0936/0857/360/291?				R4	/1004/025-050					
20150505	0942	0947	>0951	M1.9	.0054	N14E82L139	12339							1048/0701/036/103				R	/1355/012-025					
20150505	1345	1353	>1356	M1.2/SF	.0046	N15E75L133	12339							1400/0311/066/048c				R	/1355/012-025					
20150505	1419	1425	>1432	M1.3	.0067	S16E17L194	12335							1412/0286/077/050				R	/1424/025-050					
20150505	1706	1724	1750	2N/M2.6	.013	S17E15L194	12335							1924/0183/020/103				R2	/1723/025-050					
20150505	2205	2211	>2215	X2.7	.093	N15E79L139	12339	4500			590		II/2	2224/0715/360/041				R	/2212/300-800					
20150506	1145	1149	>1151	M1.9	.0032	N17E67L139	12339	720			34			1212/0738/132/059				R	/0854/025-050					
20150611	0849	0855	>0859	M1.0	.0034	S19E83L005	12367							1000/0689/128/075				R	/0713/050-100					
20150613	0711	0723	0755	SF/M1.3	.017	N14W78L127	12360											R2	/0713/050-100					
20150614	0052	0059	>0109	M2.0	.014	N14W81L127	12360											R	/0104/012-025					
20150618	0033	0127	>0155	M1.2	.040	S16W81L077	12365							0126/1714/195/270				R2	/0127/012-025			18 1435/0016		
20150618	1629	1736	1905	1N/M3.0	.087	N15E50L303	12371	250			2200		IV/2	1724/1305/360/092				R3	/1637/100-300					
20150620	0628	0648	~0734	M1.0/1F	.018	N13E25L303	12371							0643/0584/360/177				R2	/0633/050-100					
20150621	*0102	0142	0434	M2.0/1N	.032	N12E13L303	12371	360			100		II/2	0236/1366/360/072				R2	/0128/025-050			22 1900/1070		
20150621	*0206	0236	0434	1N/M2.6		N12E13L303	12371	1000			490							R6	/0228/025-050					
20150621	<0924	0944	1031	2B/M3.8	.016	S21W57L005	12367				120		IV/1					R	/1826/012-025			22 1900/1070		
20150621	1810	1820	>1828	M1.1	.0079	S18W65L005	12367											R	/1816/100-300					
20150622	1723	1823	2053	2B/M6.5	.019	N12W08L301	12371	10000			1000		II/1	1836/1209/360/358				R7	/0848/050-100			27 0030/0022		
20150625	0802	0814	0905	M7.9/3B	.017	N09W42L301	12371	1000			3800		II/1	0836/1627/360/330				R	/1251/050-100					
20150703	1247	1251	1253	M1.5/1N	.0025	S15E68L092	12378											R	/0829/025-050					
20150706	0824	0844	0859	M1.0/SN	.012	N17E42L073	12381											R2	/2040/025-050					
20150706	2032	2040	2050	M1.7/2N	.012	N18E36L073	12381											R2	/2040/025-050					
20150821	0156	0218	0237	M1.2/1F	.022	S16E39L193	12403											g						
20150821	0934	0948	1007	M1.4/2B	.018	S17E26L193	12403	120			73		II/1	1012/0555/270/072				g						
20150821	1910	2034	2050	M1.1/1N	.031	S12E26L193	12403											R2	/2027/012-025					
20150822	0639	0649	0659	M1.2/1B	.010	S15E20L193	12403	330			62		II/2	0712/0547/360/095				R	/0659/012-025					
20150822	2119	2124	2128	M3.5/1B	.011	S15E15L193	12403							2336/0225/010/195				R	/2124/050-100					
20150824	0726	0733	0735	M5.6/1B	.011	S15W04L193	12403	6900			100			0848/0272/088/245				R	/1311/025-050					
20150824	1740	1746	>1749	M1.0	.003	S15W11L193	12403											R	/1311/025-050					
20150827	0448	0544	0603	M2.9/1N	.042	S14W45L193	12403							0736/0191/022/247				R	/1311/025-050					
20150828	1304	1316	1323	M2.2/1F	.016	S14W65L193	12403											R	/1311/025-050					
20150828	1856	1903	1906	M2.1/1N	.005	S13W70L193	12403											R	/1311/025-050					

D A T E		T I M E			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME	X-ray hard		PROTONS		Attendant	
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to / v / da / pa	An / tm / Emax,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu				km/s	keV	D tmax/Ipr			
20150830	0201	0330	>0423	M1.4	.071	S14W75L193	12403													
20150917	<0928	0934	>0935	SF/M1.1	.0046	S21W04L230	12415													
20150920	0455	0503	>0517	M1.5	.013	N09E83L108	12420								R	/0502/025-050				
20150920	1730	1803	1959	2N/M2.1	.045	S20W24L230	12415	140	320	II/1			1812/1239/360/219	R	/1815/012-025	20		2045/0003		
20150927	1020	1040	1046	M1.9/1F	.0098	S22W08L106	12422								R	/1023/012-025				
20150927	2054	2100	2115	M1.0/1N	.0081	S21W16L106	12422								R	/2059/025-050				
20150928	0345	0355	0359	M3.6/SF	.016	S09W67L149	12423	270												
20150928	0727	0735	0746	M1.1/1F	.0085	S22W08L106	12422						0748/0634/118/288	R	/0729/006-012					
20150928	1301	1318	1329	M1.1/1N	.013	S22W24L106	12422						1448/0237/076/265	R	/1308/012-025					
20150928	1453	1458	>1503	M7.6	.028	S21W26L106	12422				100									
20150929	0311	0316	0331	M1.2/SF	.0026	S08W78L149	12423								R2	/0314/025-050				
20150929	0341	0343	0353	M1.1/SF	.0003	S20W36L106	12422													
20150929	0505	0516	0523	M2.9/SF	.019	S21W37L106	12422	410					0548/0503/031/254							
20150929	0533	0537	0539	M1.2/SF	.0026	S09W82L149	12423								R2	/0537/012-025				
20150929	0553	0556	>0604	M1.0	.0016	S10W80L106	12422								R	/0555/012-025				
20150929	0639	0643	0646	M1.4/1N	.0035	S20W34L106	12422						0836/0373/117/351?							
20150929	0846	0851	0855	M1.3/1N	.0067	S10W77L149	12423	200												
20150929	1109	1115	1120	M1.6/1B	.0061	S21W37L106	12422						1336/0164/107/351	R	/1114/025-050					
20150929	1920	1924	1927	M1.1/1B	.012	S20W36L106	12422	330					2000/0523/090/247							
20150930	1049	1059	1113	M1.3/1N	.014	S22W46L106	12422								R2	/1054/025-050				
20150930	1318	1320	1321	M1.1/1N	.0016	S23W59L106	12422											01		0000/0001
20151001	1303	1310	1314	M4.5/SN	.013	S23W64L106	12422								g					
20151002	0006	0013	0017	M5.5/1N	.020	S19W67L106	12422						g(02/00-03/00)	R	/0012/050-100					
20151002	1219	1226	>1231	M1.0	.0041	S19W74L106	12422						g	R	/1225/025-050					
20151002	1708	1718	>1723	M1.0/SF	.0021	S19W76L106	12422						g	R	/1717/025-050					
20151004	0234	0241	>0248	M1.0	.005	S20W90L106	12422								R	/0240/025-050				
20151015	2327	2331	>2337	M1.1/SF	.0055	S11E50L162	12434								R	/2331/025-050				
20151016	0611	0616	0620	M1.1/SF	.0036	S11E46L162	12434	1000	90				0724/0388/010/030	R	/0616/050-100					
20151017	2009	2023	>2028	M1.1	.006	S19E88L122	12437						2136/0186/047/110							
20151017	2035	2042	>2046	M1.5	.006	S18E88L122	12437						2348/0164/044/111							
20151031	1748	1752	>1808	M1.0/SF	.0027	N06E51L316	12443						1836/0312/009/019	R	/1752/025-050					
20151104	0320	0326	0334	M1.9/1N	.0052	N15W64L027	12445	56000	220	II/2			0412/0516/343/021	R	/0325/050-100					
20151104	1155	1203	>1219	M2.5/1N	.0073	N12W73L027	12445	3600	28	II/1			1236/0460/064/278	R	/1202/100-300					
20151104	<1327	1352	>1413	M3.7/2B	.059	N09W04L316	12443	1400	340	II/2 IV/1			1448/0701/360/288	R	/1342/050-100					
20151109	1249	1312	>1510	M3.9/2B	.047	S11E41L207	12449			II/2			1326/1041/273/137	R	/1311/025-050	10		0020/0004		
20151221	0052	0103	>0111	M2.8	.019	N04E90L329	12472			II/1			0127/0389/071/116	R	/0113/012-025					
20151221	1009	1019	>1032	M1.1/1N	.010	N04E85L329	12472						1048/0405/051/117							
20151222	0315	0334	>0348	M1.6/SF	.021	S23E75L332	12473	120					0348/0382/029/111	R	/0323/025-050					
20151223	0023	0040	>0052	M4.7/1F	.049	S22E63L332	12473	500		II/2 IV/2			0126/0544/089/110	R	/0035/050-100					
20151224	0149	0212	>0222	M1.1	.013	S22E50L332	12473							R2	/0210/025-050					
20151228	1120	1245	>1409	M1.8	.110	S20W10L332	12473	470	370	IV/1			1212/1212/360/163	R	/1201/006-012	29		~01/0003		

2016

D A T E		T I M E			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME	X-ray hard		PROTONS		Attendant	
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to / v / da / pa	An / tm / Emax,	E>10MeV	GLE	n	phenomena	
						X-ray/opt	J·m ⁻²				sfu				km/s	keV	D tmax/Ipr			
20160101	2310	0011	>0101	M2.3	.110	S20W73L332	12473						II/1		2324/1730/360/227	R	/2344/006-012	02		0450/0021
20160212	1036	1047	>1053	M1.0	.0058	N11W14L089	12497								R	/1045/025-050				

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant				
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	tm	E _{max} ,	E>10MeV	GLE	n	phenomena
						X-ray/opt	J·m ⁻²				sfu				km/s	keV		D	tmax/Ipr					
20160213	1516	1524	>1550	M1.8/1B	.0043	N13W25L089	12497											R	/1533/025-050					
20160214	1918	1926	>1929	M1.0/SF	.004	N15W47L089	12497											R	/1924/006-012					
20160215	1041	1100	1159	M1.1/1N	.007	N10W52L089	12497							1148/1083/022/287				R2	/1047/050-100					
20160418	0014	0029	>0102	M6.7/1F	.049	N12W62L344	12529				150	120	II/2	IV/2				g						
20160721	0042	0046	>0050	M1.2	.004	N03W42L165	12567				100													
20160721	0134	0149	>0204	M1.0	.012	N02W42L165	12567																	
20160723	0146	0211	>0223	M5.0	.054	N05W73L165	12567				140						0236/0270/038/275							
20160723	*0500	0516	>0524	M7.6/3B	.046	N02W74L167	12567				660	310					0524/0835/117/271	R	/0504/006-012					
20160723	*0527	0531	0533	M5.5/3B	.011	N02W74L167	12567				1400	900	II/1	IV/2										
20160724	0609	0620	0632	M2.0/SF	.017	N03W84L167	12567											R	/1618/050-100					
20160724	1730	1743	>1812	M1.9	.036	N07W89L168	12567										1824/0244/010/277	R	/1738/100-300					
20160807	1437	1444	>1448	M1.3	.0046	N09W67L321	12572										1524/0986/029/239	g						
20161129	1719	1723	1736	M1.0/SN	.002	S07E55L139	12615											R2	/1728/100-300					
20161129	2329	2338	>2340	M1.2/SF	.004	S08E52L139	12615											R	/2306/100-300					

2017

DATE		TIME			CLASS		COORDINATES		AR	RADIO MHz		DYNAMIC EVENT		CME		X-ray hard		PROTONS		Attendant				
y	m	d	to	tm	te	IMPORTANCE	IF	lt	lg	L	245	2695	RADIO SWEEP	to	v	/da	/pa	An	tm	E _{max} ,	E>10MeV	GLE	n	phenomena
						X-ray/opt	J·m ⁻²				sfu				km/s	keV		D	tmax/Ipr					
20170401	2135	2148	2240	M4.4/1F	.046	N16W53L054	12644				570							R	/2134/050-100					
20170402	0750	0802	0946	2N/M5.3	.044	N12W59L054	12644				100		II/1	IV/1			0824/0868/078/292c	R2	/0742/025-050					
20170402	1252	1300	>1311	M2.3	.016	N14W63L054	12644					110						R	/1318/025-050					
20170402	1818	1838	>1928	M2.1/SF	.061	N16W68L054	12644				230						1924/0405/084/289c	R3	/1807/006-012					
20170402	2026	2033	>2038	M5.7	.022	N16W70L054	12644				670						2212/0762/012/293c							
20170403	0056	0105	>0112	M1.2/SF	.0082	N15W75L054	12644											R	/0045/006-012					
20170403	1415	1429	1454	2N/M5.8	.031	N19W80L054	12644				6800	100	II/2	IV/1				R	/1422/100-300					
20170703	1537	1615	>1618	M1.3	.004	N03W89L314	12664					140					1724/0256/040/267	R	/1731/012-025					
20170709	0304	0318	0353	2N/M1.3	.013	S08E37L111	12665										g	R2	/0340/050-100					
20170714	0107	0209	0455	M2.4/1N	.13	S06W29L111	12665					130		IV/1				R5	/0314/100-300		14	0900/0022		
20170820	0136	0152	>0203	M1.1	.011	N06E89L225	12672											R	/0157/100-300					
20170904	0536	0549	0629	M1.2/1F	.015	S10W04L117	12673											R	/0601/006-012					
20170904	*1343	1530	<2359	3B/M1.5	.006	S06W13L117	12673				130	100						R	/1526/006-012					
20170904	*1805	1822	>1831	M1.0/3B	.011	S07W11L117	12673										1912/0624/288/333c							
20170904	*1846	1937	>1952	M1.7	.045	S09W10L117	12673						IV/1				1912/0874/016/235c	R2	/1903/026-050					
20170904	*1959	2002	>2006	M1.5	.004	S16W14L117	12673										1912/1077/012/263c							
20170904	*2028	2033	>2359	3B/M5.5	.018	S11W16L117	12673										2048/0803/014/244c	R	/2143/050-100		08	0035/0844		
20170904	2210	2214	>2219	M2.1	.008	S09W12L117	12673										2324/0578/018/226c							
20170905	0103	0108	>0111	M4.2	.010	S09W14L117	12673										0136/0610/012/237c	R	/0101/006-012					
20170905	0342	0351	>0404	M1.0	.011	S09W15L117	12673											R	/0400/006-012					
20170905	0433	0453	0507	M3.2	.051	S11W18L117	12673							IV/2			0524/1227/006/242	R	/0406/006-012					
20170905	0633	0640	0643	M3.8	.010	S11W18L117	12673											R	/0643/006-012					
20170905	1737	1743	1830	M2.3/1N	.012	S09W24L117	12673										1812/0488/028/161	R2	/1755/100-300					
20170906	*0852	0910	>1553	2B/X2.2	.130	S07W33L117	12673				410						1000/0419/042/252	R2	/1123/100-300					
20170906	*1153	1202	>1553	X9.3/2B	.570	S08W33L117	12673				3200	14000	II/2	IV/2			1212/0978/360/001c	R6	/1208/100-300					
20170906	1551	1556	1752	M2.5/3N	.014	S09W38L117	12673											R3	/1606/100-800					
20170906	*1921	1930	1935	1F/M1.4	.009	S08W38L117	12673											R	/1915/100-300					
20170906	*1753	2339	>2359	1F/M1.2	.005	S07W44L117	12673										2124/0495/020/235c	R14	/2301/100-300					
20170907	0459	0502	>0547	M2.4/1F	.007	S07W45L117	12673											R	/0500/100-300					

